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NORTH AMERICAN DELTOCEPHALINE LEAFHOPPERS OF THE GENUS AMBLYSELLUS SLEESMAN

(Homoptera: Cicadellidae)

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ABSTRACT—The North American genus *Amblysellus Sleesman* is redefined to include seven species: *A. curtisii* (Fitch); *A.* **wyomus**, n. sp.; *A. durus* (Beamer and Tuthill), n. comb.; *A. valens* (Beamer and Tuthill), n. comb.; *A. dorsti* (Oman), n. comb.; *A. punctatus* (Osborn and Ball), n. comb.; and *A. grex* (Oman), n. comb. All species are keyed and redescribed with all critical diagnostic features illustrated. New distributional records and host plant data are included.

The genus *Amblysellus* Sleesman has been long defined on the basis of the only included species, *Amblycephalus curtisii* Fitch, a common eastern North American deltocephaline leafhopper. A study of *Deltocephalus* Burmeister, *Amblysellus* and 16 related North American

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genera, including over 100 species, with the common character of a linear connective fused with the aedeagus, has convinced me that many of the presently accepted generic definitions, based heavily on the venation of the forewings, are neither inclusive nor exclusive. This paper is one of a series in which realignments and new definitions will be proposed for this group of deltocephaline leafhoppers.

Amblysellus, as here defined, includes seven species. Five of these were formally in *Deltocephalus*, and one is new. Except for *curtisii*, all of the species are western in distribution. Little is known concerning true host and/or food plants, but all are likely grass feeders.

Amblysellus Sleesman

Amblysellus Sleesman, 1929:93. Type-species: *Amblycephalus curtisii* Fitch, 1851:61.

Revised description. Moderately small (2.2–3.8 mm) and comparatively robust leafhoppers; head including eyes as wide as or slightly wider than pronotum; crown produced beyond eyes and acute to bluntly angular at apex; anterior margin of crown broadly and smoothly rounded to face, crown in lateral view slightly inflated or not, marginal ocelli small and rather remote from eyes, clypeal suture obscure, clypellus quadrate with sides parallel. Forewings long and extending well beyond apex of abdomen or shortened and exposing apex of abdomen; in forms with shortened forewings, the apical cells and each appendix are much reduced and at times nearly absent. Forewing usually with three anteapical cells; inner cell open or closed basally; central cell divided or not; outer cell normal, reduced or sometimes absent.

Male genitalia. Connective linear and fused with aedeagus; aedeagus in lateral view essentially transverse with distal portion of shaft obliquely upturned or shaft greatly elongated and smoothly upturned distally, extreme aedeagal apex elongated oval capitate (except *durus*), with finlike, hoodlike, or lanceolate processes near and extending beyond ventral margin of aedeagus (except *curtisii*), gonopore subapical and visible in ventral aspect at base of variously developed cleft or slit, extreme apex of aedeagus in dorsal view usually open on distal margin; style in dorsal view with mesal lobe moderately long, stout, and marginally irregular and lateral lobe rather short, broad, and blunt.

Diagnosis. *Amblysellus* can be separated from all other North American leafhoppers with a fused linear connective and aedeagus by the following combination of characters: aedeagus obliquely upturned distally with extreme apex enlarged and irregularly oval (except *durus*), with finlike, hoodlike, or lanceolate processes near and extending beyond ventral margin (except *curtisii*), gonopore subapical on ventral margin at base of variously developed cleft or notch; style in dorsal view with mesal lobe moderately long, stout, and marginally irregular and lateral lobe short, broad, and blunt. Forewings not appearing reticulate due to extra crossveins.

Key to the North American Species of **Amblysellus**

1. Aedeagus without a clearly defined finlike, hoodlike, or lanceolate process near and extending beyond ventral margin 2

Aedeagus with a clearly defined finlike, hoodlike, or lanceolate process near and extending beyond ventral margin 3

2. Forewings brown with veins yellowish green, strongly contrasting; markings of crown and pronotum as in fig. 1 ..... **curtisii** (Fitch)
Forewings reddish brown with veins concolorous, not contrasting; markings of crown and pronotum as in fig. 8 ..... **wyomus**, n. sp.

3. Processes closer to base of aedeagus than to apex of aedeagus 4
Processes closer to apex of aedeagus than to base of aedeagus 5

4. Process hoodlike and broad, aedeagal shaft narrow and greatly elongated (fig. 19) ..... **durus** (Beamer & Tuthill)
Process lanceolate and acute, aedeagal shaft not as above (fig. 21) ..... **valens** (Beamer & Tuthill)

5. Aedeagus without a long neckline area between ventral process and oval apical area (fig. 27) ..... **dorsti** (Oman)
Aedeagus with a long necklike area between ventral process and oval apical area 6

6. Ventral process broad basally and finely serrated on distal margin (fig. 36); mesal lobe of style not clearly expanded near middle (figs. 39–40) ..... **punctatus** (Osborn & Ball)
Ventral process narrow basally and coarsely serrated laterally and distally (fig. 44); mesal lobe of style strongly expanded near middle (figs. 42–43) ..... **grex** (Oman)

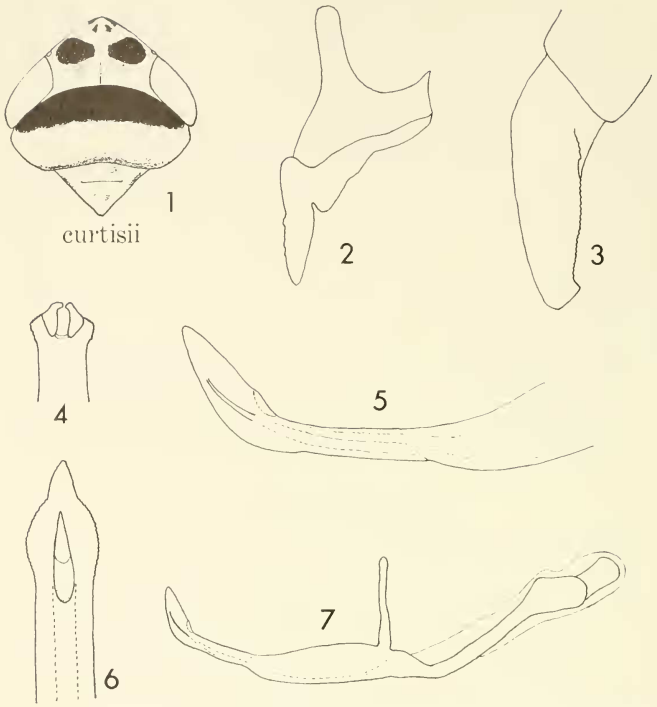
Amblysellus curtisii (Fitch)
(Figs. 1–7)

Amblycephalus curtisii Fitch, 1851:61.
Amblysellus curtisii (Fitch): Sleesman, 1929:131.

Length. Male 3.0–3.5 mm. Female 3.2–3.6 mm.

Structure. Crown varying from bluntly angular to acute at apex in dorsal view (fig. 1). Forewings long and extending well beyond abdomen (macropterous forms) or shortened and exposing at least a portion of the genital segment (submacropterous forms). Inner anteapical cell rarely closed basally, usually open; central anteapical cell undivided; outer anteapical cell rarely normal, usually much reduced, or entirely absent. Apical cells moderately long to distinctly shortened. Appendix small.

Coloration. Venter of abdomen and thorax dark fuscus to black and variably paler at segmental margins; legs pale brown to stramineous, all femora, except apices, and hind tibiae infuscated to blackened; face stramineous to pale yellowish green with all sutures, clypeal arcs above level of antennae, margins of clypeus below level of antennae, portions of genae under eyes and base of antennae, and most of clypellus broadly infuscated or blackened, darkened clypeal arcs often fused to form an irregular blotch, markings on lower portion of face considered together form an irregular "Y" with stalk on clypellus and an arm under each eye; crown, pronotum, and scutellum with same ground color as face and marked with fuscus to black (fig. 1), small spots at extreme coronal apex often reduced or absent, darkened portion of posterior pronotal margin variable, at times nearly absent; forewings brown or brown hyaline with veins strongly yellowish green, apical veins often concolorous with brown ground color.



Figs. 1–7. *Amblyscllus curtisii* (Fitch): 1, head and thoracic dorsum; 2, style in dorsal view; 3, distal portion of style in lateral view; 4, aedeagal apex in dorsal view; 5, distal portion of aedeagus in lateral view; 6, distal portion of aedeagus in ventral view; 7, aedeagus and connective in lateral view.

Male genitalia. Aedeagus in lateral view (fig. 7) with shaft narrowed distally and obliquely upturned, extreme apical portion (fig. 5) elongated and oval. Gonopore below apex on venter of shaft (fig. 6). Aedeagal apex in dorsal view (fig. 4) usually slightly cleft. Style in dorsal view (fig. 2) with mesal lobe stout and irregular along inner margin. Mesal lobe of style in lateral view (fig. 3) with a blunt tooth near apex.

Female genitalia. Pregenital sternum with lateral margins narrowly rounded and obliquely directed mesad thus exposing underlying sclerites, posterior margin concave on middle third and at times with a vaguely defined broad blunt tooth at center of concavity.

Records. The type locality is [Salem?], New York. My confirmed records: CONNECTICUT, Stamford; DELAWARE), Wilmington; DISTRICT OF COLUMBIA, Washington; ILLINOIS, Algonquin, Carbondale, Elgin, Urbana; IOWA, Ames, Fairfax, Iowa City; KANSAS, Cherokee Co., Douglas Co.; MAINE, Portland; MARYLAND, Beltsville; MASSACHUSETTS, Chicopee, Monterey, Northboro, Waverly; MICHIGAN, East Lansing; MINNESOTA, Brandon; MISSOURI, Columbia; NEW HAMPSHIRE, Bath; NEW YORK, Ithaca, Lancaster, Remsen, Salem, West Nyack; OHIO, Barberton, Columbus, Delaware, Salineville; ONTARIO, Toronto, Vineland; PENNSYLVANIA, Echo Lake, Hazelton; VERMONT, Jay, Newport, Wells River, Woodstock; VIRGINIA, Arlington, Bluemont; WEST VIRGINIA, Randolph Co., Upshur Co.; WISCONSIN, Madison, Osceola.

Notes. The strongly bicolored forewings provide an easy basis for separating *curtisii* from its congeners; but the aedeagus of *curtisii* strongly resembles that of *wyomus*; compare fig. 7 and fig. 13. This is the only member of the genus known east of the Mississippi River, but the species is known as far west as the Dakotas, Nebraska, and Kansas. Even though *curtisii* is recorded for some southern states, Georgia and South Carolina, it appears to be most abundant in the northern part of its range. Recorded plant associations include bluegrass meadows, small grains, and legumes.

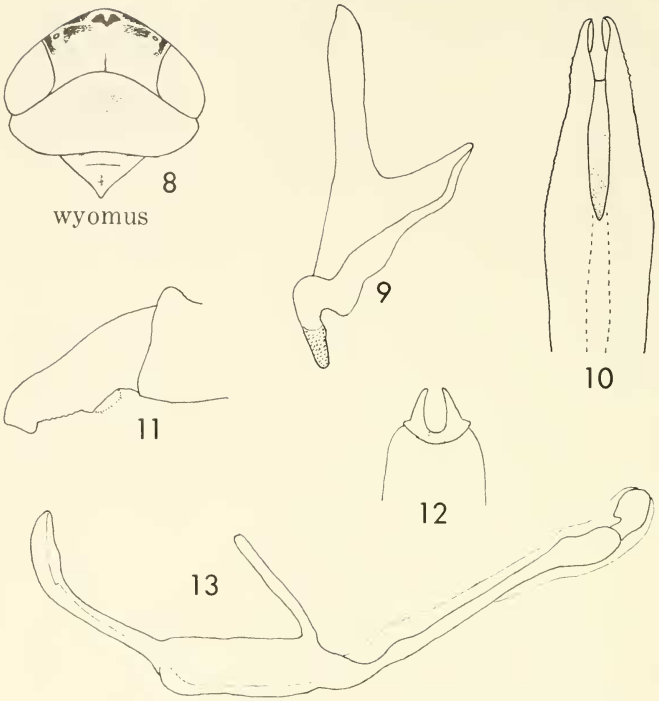
Amblysellus wyomus, n. sp.
(Figs. 8–13)

Length. Male 2.8–3.0 mm. Female 2.9–3.1 mm.

Structure. Crown bluntly angular at apex in dorsal view (fig. 8). Forewings long and extending just beyond abdomen (macropterous forms) or much shortened and entirely exposing genital and pregenital segments and middle portion of preceding abdominal segment with apical cells and each appendix greatly reduced (submacropterous forms). Inner anteapical cell usually closed basally; central anteapical cell not divided; outer anteapical cell normal, open basally, or reduced.

Coloration. Venter of abdomen dark fuscus to black, edges of segments variably paler or not; venter of thorax and legs reddish brown with tibiae and tarsi at times slightly darker; face reddish brown with clypeal arcs darkened; crown, pronotum, and scutellum reddish brown with four small dark spots along anterior margin of crown (fig. 8), lateral pair of spots often obscure or wanting; forewings reddish brown hyaline with veins concolorous, cells distally often darker; dorsum of abdomen dark fuscus to black with pregenital segment variably white or yellowish.

Male genitalia. Aedeagus in lateral view (fig. 13) with a weakly developed broad fin (actually paired structures but only one visible in lateral view) ventrally at base of long obliquely upturned distal shaft; extreme apex irregularly elongated oval. Apical portion of aedeagus in ventral view (fig. 10) with gonopore at base of elongated slit; apex of aedeagus in dorsal view (fig. 12) cleft;



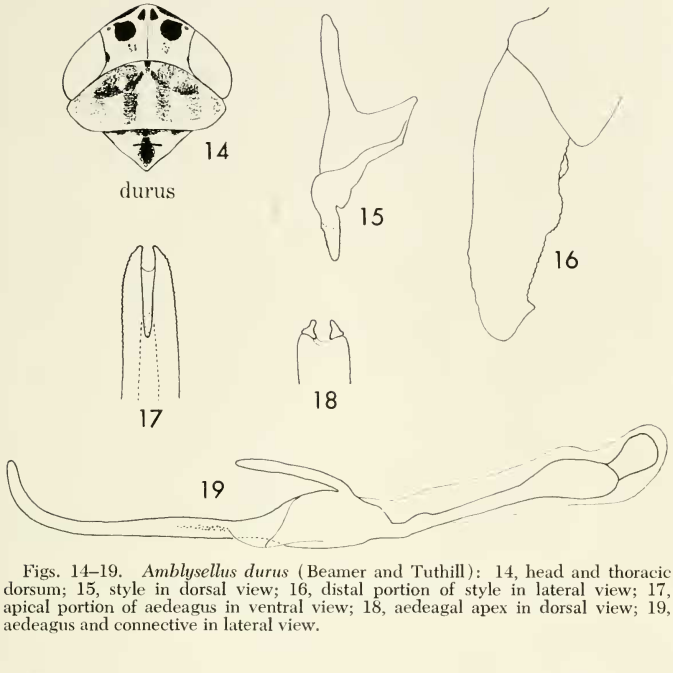
Figs. 8–13. *Amblysellus wyomus*, n. sp.: 8, head and thoracic dorsum; 9 style in dorsal view; 10, apical portion of aedeagus in ventral view; 11, distal portion of style in lateral view; 12, aedeagal apex in dorsal view; 13, aedeagus and connective in lateral view.

style in dorsal view (fig. 9) with mesal lobe slightly expanded on lateral margin and lateral lobe broad and blunt; mesal lobe of style in lateral view (fig. 11) with a tooth near apex on irregular ventral margin.

Female genitalia. Posterior margin of pregenital sternum appearing transverse to slightly concave.

Records. Holotype male (USNM type no. 70813) and allotype female, nine miles east of Laramie, Wyoming, 8,600 ft., 16 August 1968, P. W. Oman. Six male and six female paratypes with same data; one female paratype Hamilton, Montana, 19 July 1949, R. H. Beamer.

Notes. This species is distinctive on the easily observed coloration



Figs. 14–19. *Amblysellus durus* (Beamer and Tuthill): 14, head and thoracic dorsum; 15, style in dorsal view; 16, distal portion of style in lateral view; 17, apical portion of aedeagus in ventral view; 18, aedeagal apex in dorsal view; 19, aedeagus and connective in lateral view.

as well as on the unique features of the aedeagus. The reddish brown head, thorax, and forewings contrast rather sharply with the dark fuscus to black abdomen. In the short winged forms, dorsally, the pale pregenital segment is striking. The aedeagus of *wyomus* is most similar to that of *curtisii*, but the styles are different. The coloration and distribution are entirely dissimilar in the two species. No plant associations are known for *wyomus*.

Amblysellus durus (Beamer and Tuthill), n. comb.
(Figs. 14–19)

Deltocephalus durus Beamer and Tuthill, 1934:20.

Length. Male. 2.8–3.2 mm. Female 3.1–3.6 mm.

Structure. Crown bluntly angular at apex in dorsal view (fig. 14). Forewings shortened and exposing dorsum of genital segment and often much of pregenital segment (submacropterous forms). Inner anteapical cell rarely open basally, usually closed; central anteapical cell usually undivided; outer anteapical cell not reduced. Apical cells shortened; appendix small. Macropterous forms unknown.

Coloration. Venter of abdomen and thorax pale brown and variably infuscated or blackened, often appearing largely dark but always at least edges of segments paler; legs pale brown and variably infuscated, never appearing entirely fuscus; face pale brown to sordid stramineous with clypeal arcs, upper edges of genae, and central portion of clypellus variably infuscated or blackened, markings on clypeal arcs often fused but with central area of clypeus below level of antennae unmarked; crown, pronotum, and scutellum pale brown marked with black and various shades of brown (fig. 14), longitudinal stripes on pronotum often vague; forewings light brown hyaline with veins sordid whitish and cells variably infuscated.

Male genitalia. Aedeagus in lateral view (fig. 19) with an expansion near base of shaft projecting beyond margin; shaft elongated, slender, and smoothly upturned distally. Apical portion of aedeagus in ventral view (fig. 17) with gonopore much below cleft apex. Tip of aedeagus in dorsal view (fig. 18) cleft. Style in dorsal view (fig. 15) with mesal lobe irregular on inner margin and lateral lobe short and blunt. Mesal lobe of style in lateral view (fig. 16) irregularly serrated on ventral margin with a distinct tooth near apex.

Female genitalia. Posterior margin of pregenital sternum irregularly transverse or vaguely and broadly concave with the slightest suggestion of a tooth at middle.

Records. The type locality is Flagstaff, Arizona. My confirmed records: ARIZONA, Chiricahua Mts., Flagstaff, Mt. Graham, Santa Catalina Mts., Santa Rita Mts.; NEW MEXICO, Cloudcroft.

Notes. The aedeagus of *durus* is unique and provides the best characters for the identification of the species. The host plants of this southwestern species are unknown.

Amblysellus valens (Beamer and Tuthill), n. comb.
(Figs. 20–25)

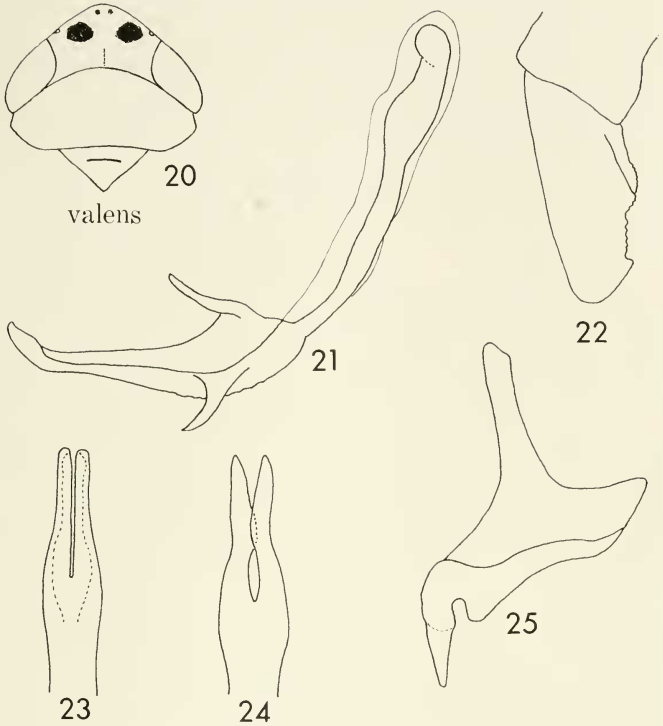
Deltocephalus valens Beamer and Tuthill, 1934:20.

Length. Male 2.4–2.8 mm. Female 2.8–3.0 mm.

Structure. Crown bluntly angular at apex in dorsal view (fig. 20). Forewings moderately long and barely exposing the tip of genital segment (macropterous forms) or shortened and exposing most of genital segment and part of pregenital segment with apical cells and each appendix reduced (submacropterous forms). Inner anteapical cell usually closed basally; central anteapical cell divided or not; outer anteapical cell normal.

Coloration. Venter of abdomen and thorax pale brown and variably infuscated or blackened, edges of segments broadly or narrowly paler; legs pale brown and not or only lightly infuscated; face pale brown and marked essentially like that of *durus* but with more minor variations; crown, pronotum, and scutellum sordid stramineous to pale brown marked with black and various shades of brown (fig. 20), minute spots at coronal apex at times obscure or wanting, pronotum and scutellum either vaguely darkened or not; forewings light brown hyaline with veins concolorous, cells not infuscated.

Male genitalia. Aedeagus in lateral view (fig. 21) with a moderately long sharp process projecting beyond ventral margin near base of shaft (actually paired processes but only one visible in lateral view), shaft tapering distally to an

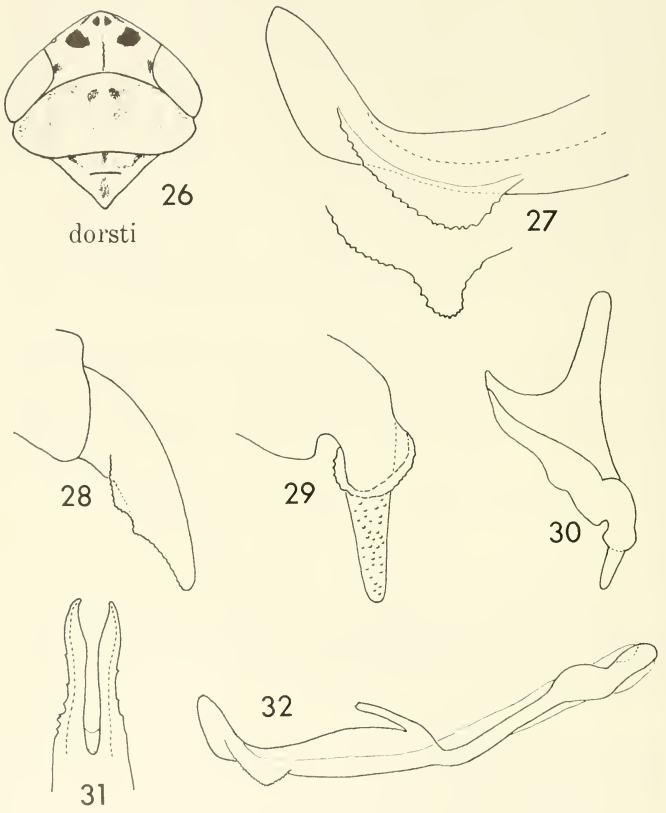


Figs. 20–25. *Amblysellus valens* (Beamer and Tuthill): 20, head and thoracic dorsum; 21, aedeagus and connective in lateral view; 22, distal portion of style in lateral view; 23, apical portion of aedeagus in ventral view; 24, same, variation; 25, style in dorsal view.

obliquely upturned irregularly oval apex. Apical portion of shaft in ventral view (figs. 23–24) with gonopore apparently at base of a variable deep slit or cleft. Style in dorsal view (fig. 25) with mesal lobe stout and lateral lobe broad and blunt. Mesal lobe of style in lateral view (fig. 22) irregularly serrated on ventral margin with a distinct tooth near apex.

Female genitalia. Posterior margin of pregenital segment essentially transverse with or without a small notch at center.

Records. The type locality is Grand Teton National Park, Wyoming. My confirmed records: COLORADO, Creede, El Paso Co., Northgate, Pingree Park, Steamboat Springs, Walden; WYOMING, Grand Teton



Figs. 26–32. *Amblysellus dorsti* (Oman): 26, head and thoracic dorsum; 27, distal portion of aedeagus in lateral view with variations in fin below; 28, distal portion of style in lateral view; 29, stylar lobes in dorsal view; 30, style in dorsal view; 31, apical portion of aedeagus in posterior view; 32, aedeagus and connective in lateral view.

National Park. Beirne (1956:112) reported *valens* from the grassland regions of Alberta and Saskatchewan.

Notes. The unique aedeagus distinguishes *valens*. However, there is some intraspecific variation in the length and curvature of the lateral aedeagal processes and in the outline of the aedeagal apex. Other than "grasses," the plant relationships of this western species are not known.

Amblysellus dorsti (Oman), n. comb.
(Figs. 26–32)

Deltocephalus dorsti Oman, 1940:202.

Length. Male 2.8–3.4 mm. Female 3.0–3.8 mm.

Structure. Crown bluntly angular at apex in dorsal view (fig. 26). Forewings long and extending well beyond abdomen (macropterous forms) or shortened and exposing at least tip of genital segment with apical cells and each appendix reduced (submacropterous forms). Inner anteapical cell usually closed basally, rarely open; central anteapical cell sometimes undivided, usually divided; outer anteapical cell normal or slightly reduced.

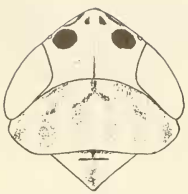
Coloration. Venter of abdomen and thorax dark fuscus to black and variably paler at edges of segments or not; legs light brown and variably infuscated or blackened; face light brown with clypeal arcs, all sutures, middle of clypellus, and upper edges of genae darkly infuscated or blackened; crown, pronotum, and scutellum sordid stramineous to pale brown and marked with black or various shades of brown (fig. 26), size and shape of apical coronal spots highly variable, longitudinal banding of pronotum often obscure and sometimes absent; forewings pale brown hyaline with veins concolorous and cells rather lightly infuscated or not.

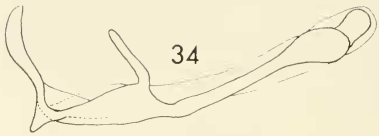
Male genitalia. Aedeagus in lateral view (fig. 32) with a broad finlike projection (actually paired structures but only one visible laterally) extending beyond ventral margin near obliquely upturned broadly oval apex. Shape of fin variable (fig. 27); outline of apical oval portion variable. Apical portion of aedeagus in posterior view (fig. 31) deeply split with gonopore at base of split. Style in dorsal view (fig. 30) with mesal lobe expanded in basal half (fig. 29) and lateral lobe short and broad. Mesal lobe of style in lateral view (fig. 28) with a rather broad subapical tooth on irregular ventral margin.

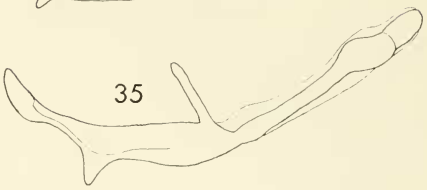
Female genitalia. Posterior margin of pregenital sternum broadly concave on middle portion.

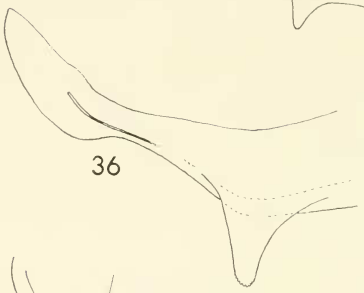
Records. The type locality is Brighton, Utah. My confirmed records: ARIZONA, Littlefield, Patagonia; COLORADO, Gould, Pingree Park, Rockwood; UTAH, Brighton, Duck Creek, Garden City, Herber City, Logan, Mantua, Morgan, Orton, Providence, Provo, Richfield, Salt Lake City, Snyderville, Springville, Strawberry Dam.

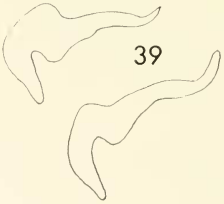
Notes. *A. dorsti* is most similar to *grex*, but it differs from that species in having a much wider ventral anterior aedeagal fin and by lacking a long narrow portion or "neck" between the fin and the elongate oval apex. Other than "grasses," the host plant relationships of *dorsti* are not established.

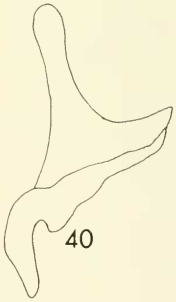












Figs. 33–40. *Amblysellus punctatus* (Osborn and Ball): 33, head and thoracic dorsum; 34, aedeagus and connective in lateral view, abnormal; 35, same, normal; 36, distal portion of aedeagus in lateral view; 37, apical portion of aedeagus in ventral view; 38, distal portion of style in lateral view; 39, distal portion of styles in dorsal view, variations; 40, style in dorsal view.

Amblysellus punctatus (Osborn and Ball), n. comb.
(Figs. 33–40)

Deltocephalus punctatus Osborn and Ball, 1898:94.

Length. Male 2.2–2.7 mm. Female 2.5–3.3 mm.

Structure. Crown bluntly angular at apex in dorsal view (fig. 33). Forewings moderately long and exposing most of genital segment (macropterous forms) or shortened and entirely exposing genital segment and most of pregenital segment with apical cells greatly reduced and each appendix nearly absent (submacropterous forms). Inner anteapical cell usually closed basally; central anteapical cell divided or not; outer anteapical cell normal to distinctly reduced.

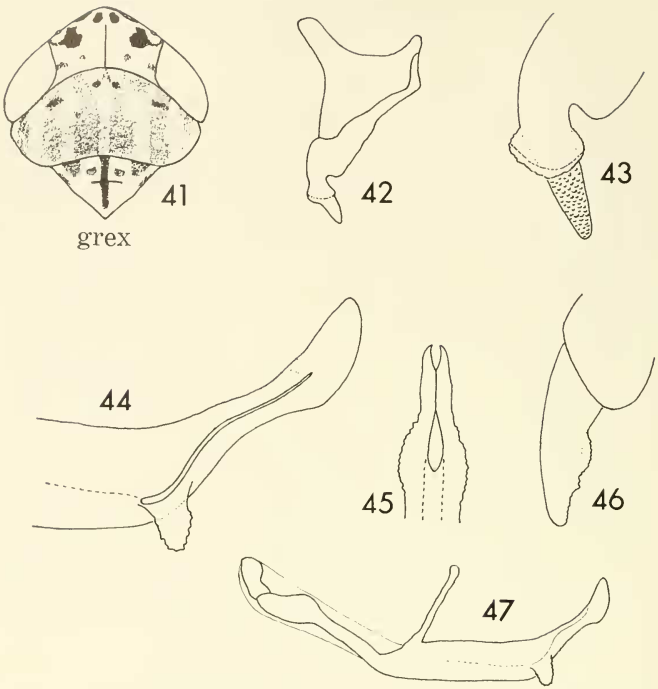
Coloration. Venter of abdomen and thorax pale yellowish brown to pale reddish brown and lightly to heavily infuscated and then appearing largely dark; legs with same ground color as venter and either not infuscated or lightly and irregularly so; face with same ground color as venter and varying from immaculate to with black clypeal arcs and other darkened areas on lower face; crown, pronotum, and scutellum varying from stramineous to pale reddish brown and marked with dark fuscus or black (fig. 33), in paler forms the minute pair of apical coronal spots and stripes on pronotum often obscure or absent, size and shape of apical coronal spots variable; forewings stramineous hyaline and either with or without a wash of pale reddish brown or a light infuscation of cells.

Male genitalia. Aedeagus in lateral view (fig. 35) with a finlike projection extending beyond ventral margin near distal portion of shaft (actually paired processes but only one visible in lateral view), shaft tapering distally to an obliquely upturned elongate oval apex (fig. 36). Apical portion of shaft in ventral view (fig. 37) with gonopore subapical at base of cleft. Style in dorsal view (fig. 40) with mesal lobe moderately long and stout with lateral lobe broad and blunt, shapes of lobes somewhat variable (fig. 39). Mesal lobe of style in lateral view (fig. 38) stout with a distinct tooth near apex.

Female genitalia. Posterior margin of pregenital sternum concave on central half with middle portion of concavity at times appearing transverse.

Records. The type locality is Little Rock, Iowa. My confirmed records: ARIZONA, Chiricahua Mts., Kaibab, Santa Catalina Mts., Santa Rita Mts., Springerville; COLORADO, Estes Park, Fort Collins, Pinecliffe; IOWA, Little Rock; SOUTH DAKOTA, Hot Springs.

Notes. *A. punctatus* is close to both *grex* and *dorsti* in characters of the aedeagus. In both of those species the serrations on the ventral fin are gross and extensive, whereas in *punctatus* the serrations are minute and limited to the apical portion of the fin. In an aberrantly developed male (fig. 34), the aedeagal shaft is upturned distally at nearly a right angle to its long axis. The coloration of *punctatus* is more variable than in any of its congeners. The specimens from Arizona are somewhat darker and/or more reddish brown than those from Iowa, South Dakota, and Colorado; but structurally I cannot separate them. The type series was swept from *Sporobolus*.



Figs. 41–47. *Amblysellus grex* (Oman): 41, head and thoracic dorsum; 42, style in dorsal view; 43, mesal lobe of style in dorsal view; 44, distal portion of aedeagus in lateral view; 45, apical portion of aedeagus in posterior view; 46, distal portion of style in lateral view; 47, aedeagus and connective in lateral view.

Amblysellus grex (Oman), n. comb.
(Figs. 41–47)

Deltocephalus grex Oman, 1940:201.

Length. Male 3.2–3.8 mm. Female 3.2–3.8 mm.

Structure. Crown bluntly angular at apex in dorsal view (fig. 41). Forewings long and extending well beyond abdomen (macropterous forms). Inner anteapical cell closed basally; central anteapical cell usually divided, rarely undivided; outer anteapical cell normal or reduced. Submacropterous forms unknown.

Coloration. Venter of abdomen and thorax stramineous to pale brown and essentially unmarked to heavily infuscated or blackened with edges of segments irregularly paler; legs with same ground color as venter and varying from unmarked

to darkly marked on femora and hind tibiae; face varying from stramineous and unmarked to pale brown with all sutures, clypeal arcs, upper edges of genae, and central portion of clypellus variously infuscated or blackened; crown, pronotum, and scutellum stramineous to pale brown and varying from unmarked to marked with black or shades of brown (fig. 41), the minute apical coronal spots sometimes obscure or absent, the larger apical coronal spots variable in size and shape but rarely appearing clearly rounded, darker markings on pronotum and scutellum at times obscure; forewings varying from stramineous hyaline to sordid whitish hyaline with cells variably infuscated at edges, veins white to sordid white.

Male genitalia. Aedeagus in lateral view (fig. 47) with a narrow finlike projection (actually paired processes but only one visible laterally) extending beyond ventral margin near obliquely upturned distal portion of shaft; distal portion of aedeagus in lateral view (fig. 44) with a constricted neckline area between ventral fin and elongated oval apex. Apical portion of aedeagus in posterior view (fig. 45) cleft with gonopore at base of cleft. Style in dorsal view (fig. 42) with mesal lobe expanded in basal half (fig. 43) with lateral lobe short and broad. Mesal lobe of style in lateral view (fig. 46) with a rather broad subapical tooth on irregular ventral margin.

Female genitalia. Posterior margin of pregenital sternum appearing transverse or slightly concave.

Records. The type locality is Kirkland Junction, Arizona. My confirmed records: ARIZONA, Chiricahua Mts., Globe, Granite Dells, Herford, Huachuca Mts., Kirkland Junction, Littlefield, Long Valley, Mt. Graham, Oak Creek Canyon, Patagonia, Sabino Canyon, Santa Rita Mts., Superior, White Mts.; CALIFORNIA, Biggs, Bray, Cajon Pass, Califa, Del Mar, Dunsmuir, El Portal, Hondo, Idyllwild, Jacumba, Mariposa, Marysville, Montara, Nicolaus, Oxnard, Palo Alta, Palomar Mt., Pasadena, Petaluma, Pine Valley, Redding, Riverside, Roseville, San Francisco, San Jacinto Mts., San Mateo Co., Sequoia National Park, Taylorville, Three Rivers, Turlock, Weed, Winters, Woodland, Yosemite National Park; COLORADO, Denver, Durango; IDAHO, Rogerson; NEVADA, Caliente, Overton, Loganda; NEW MEXICO, Mesilla; OREGON, Ashland, Bend, Corvallis, Frenchglen, Glendale, Klamath Falls, Madras, Medford, Mt. Hood, Union, Worden; TEXAS, El Paso; UTAH, Brighton, Castle Valley, Grafton, Hurricane, Jordan Narrows, Leeds, Richfield, St. Clara, St. George, Washington, Zion National Park; WASHINGTON, Buckley, Fort Hood, Kalama, Puyallup, Ritzville, Sumner, Tacoma. Beirne (1956:112) recorded *grex* as widely distributed in southern British Columbia.

Notes. *A. grex* is closest to *punctatus* in the features of the male genitalia. The ventral aedeagal fin in *grex* is much narrower and coarsely serrated with the mesal lobe of the style clearly expanded in its basal half, whereas the ventral aedeagal fin in *punctatus* is broad and only finely serrated at its apex with the mesal lobe of the style only vaguely or not expanded in its basal half. *A. grex* is one of the most common and abundant leafhoppers in the West. Plant associations include al-

falfa, dandelion, sour cherry, sweet cherry, peach, rye, barley, and various grasses.

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